

Ultra-Small Thermal Panel Printer

Mini PLUS

User Manual



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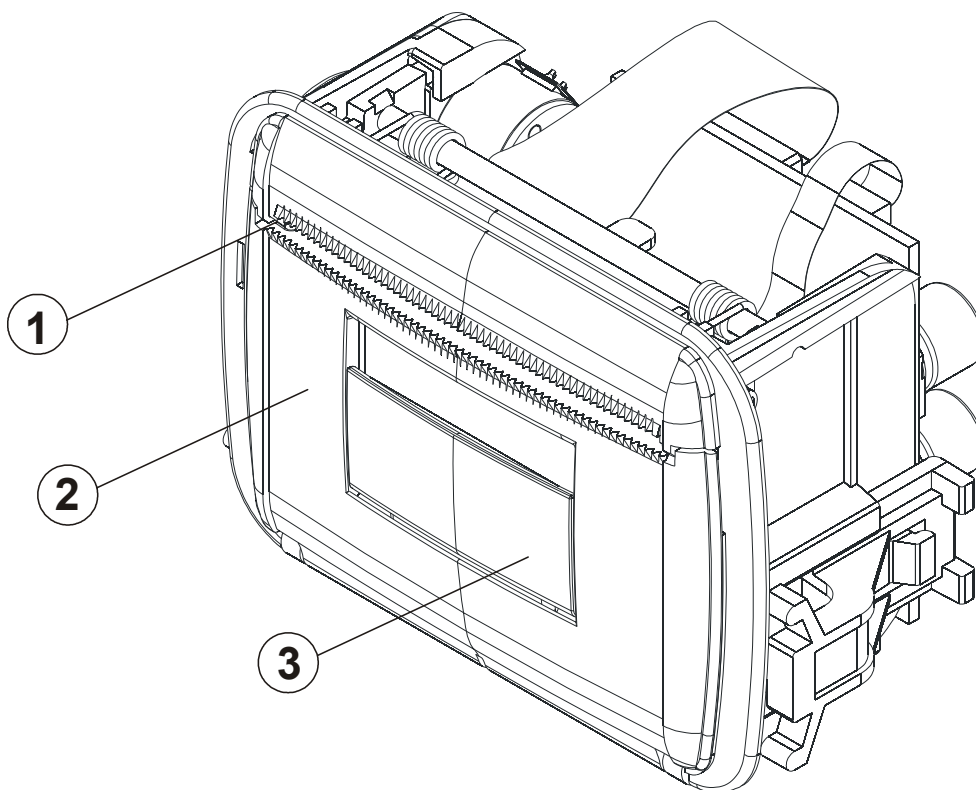
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PRINTER COMPONENTS

A. Front external view

- 1- Paper outfeed
- 2- Frontal Panel
- 3- Cover opening levers



B. Rear external view

1- Power supply connector

2- RS232 serial interface connector and other signals.

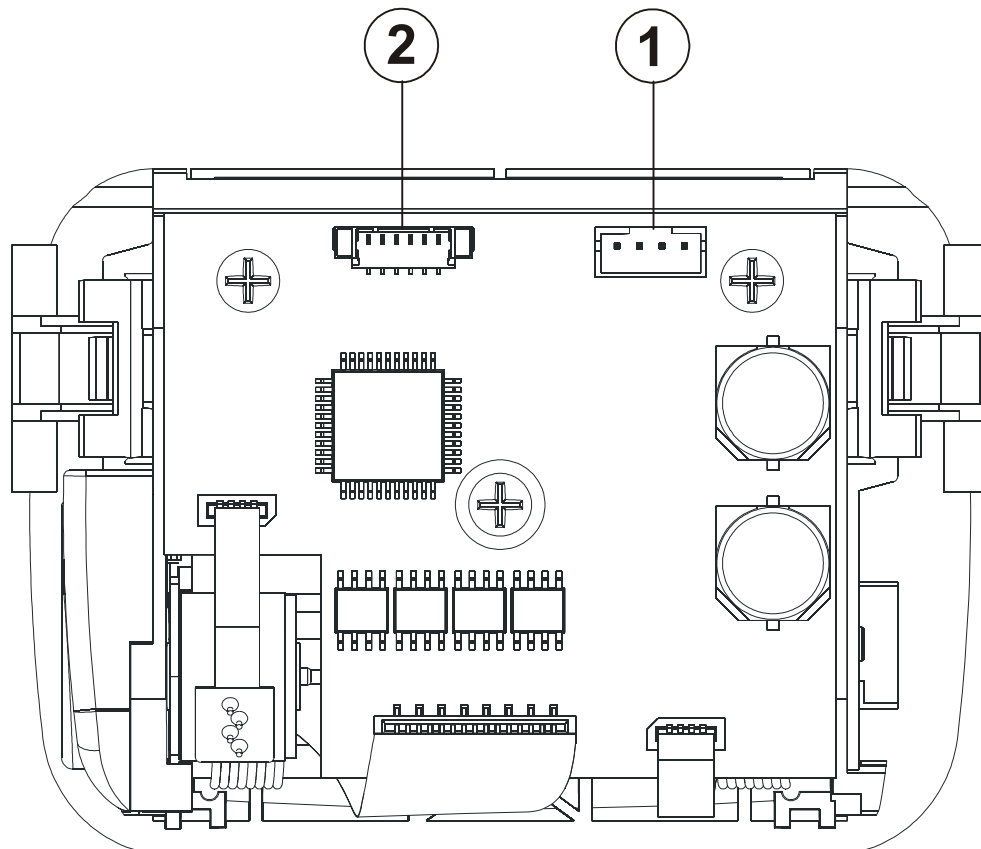


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INTRODUCTION

MANUAL CONTENTS

In addition to the introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

- Chapter 1: Contains the information required for correct printer installation and its proper use
- Chapter 2: Contains information on interface specifications
- Chapter 3: Contains a description of the printer command set
- Chapter 4: Contains Technical Specifications of the printer
- Chapter 5: Contains the character sets (fonts) used by the printer

EXPLANATORY NOTES USED IN THIS MANUAL



N.B.

Gives important information or suggestions relative to the use of the printer.



WARNING

Information marked with this symbol must be carefully followed to guard against damaging the printer.



DANGER

Information marked with this symbol must be carefully followed to guard against operator injury or damage.

GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the printer.
- Before cleaning the printer, disconnect the power supply cable.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Pay attention that the external frame, the cover and the printer frame are made from polypropylene, so it's better to keep away from:
 - ✓ ammonia
 - ✓ acetone
 - ✓ benzol
 - ✓ hydrocarbon
 - ✓ perchlorethylene
 - ✓ trichlorethylene
 - ✓ methanol
 - ✓ washing-up liquid
 - ✓ dishwasher liquid
 - ✓ dichloromethane
 - ✓ ethylene
 - ✓ toluene
- Do not use the printer on unstable surfaces that might cause it to fall and be seriously damaged.
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- Make sure the printer is placed in such a way as to avoid damage to its wiring.
- Make sure that the maximum load absorbed by the printer does not exceed the approved Maximum load by the type of cable used to supply.
- Do not introduce foreign objects of any kind into the printer as this could cause a short circuit or damage parts that could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:
 - A. The feed connector has been damaged.
 - B. Liquid has seeped inside the printer.
 - C. The printer has been exposed to rain or water.

- D. The printer is not functioning normally despite the fact that all instructions in the users manual have been followed.
- E. The printer has been dropped and its outer casing damaged.
- F. Printer performance is poor.
- G. The printer is not functioning.

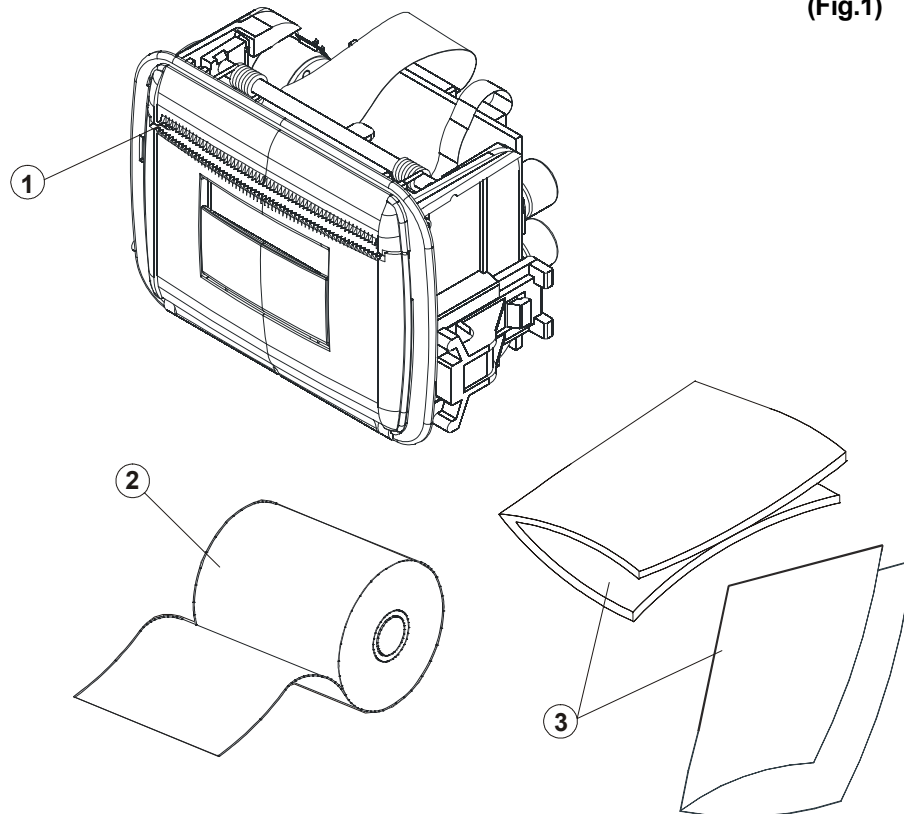
UNPACKING THE PRINTER

Remove the printer from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.

Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

- 1. Printer
- 2. Paper roll (inside the printer)
- 3. Manual (or Instructions Sheet)

(Fig.1)



GENERAL FEATURES

Ultra small and ultra-compact thermal panel printer, with light weight. 58mm paper width, 30mm paper roll diameter with easy paper loading system.

Mini PLUS is provided with the innovative fixing system "EASYLOCK": this system allows to fit the printer to any panel thickness.

Mini PLUS is suitable for portable systems, diagnosis/ analysis and control systems, EFT/ POS, industrial instruments, etc.

Mini PLUS is supplied by 5 Vdc and is available with serial RS232 (optional TTL serial interface) and paper sensor.

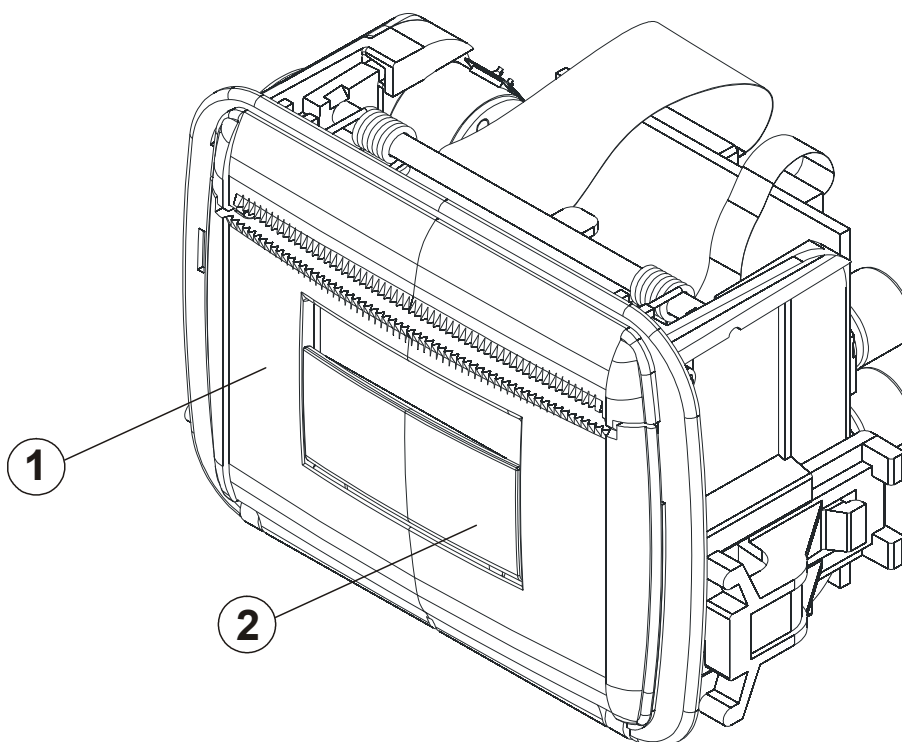
INTRODUCTION

it's equipped with a 203 dpi thermal printing mechanism, using 57,5 mm-wide paper rolls. It can print 24 or 40 characters per line according to the selection made at the setup stage or through a software command; label printing is not possible.

PRINTER DESCRIPTION

The printer has an ABS casing (ref.1 of fig. 2) with a front cover (ref. 2 of fig. 2) which opens to allow access to the paper roll and print head.

(Fig.2)



- External FEED key (connect to serial connector see the paragraph 2.1). When the FEED key is pressed, the printer advances the paper. During power-up, if the FEED key is held down, the printer enters the SETUP routine.
- The external STATUS led (connect to serial connector see the paragraph 2.1) displays printer operating status and this check is performed "on-line". Table 1 lists operating statuses and the LED signals connected to them:

(Tab. 1)

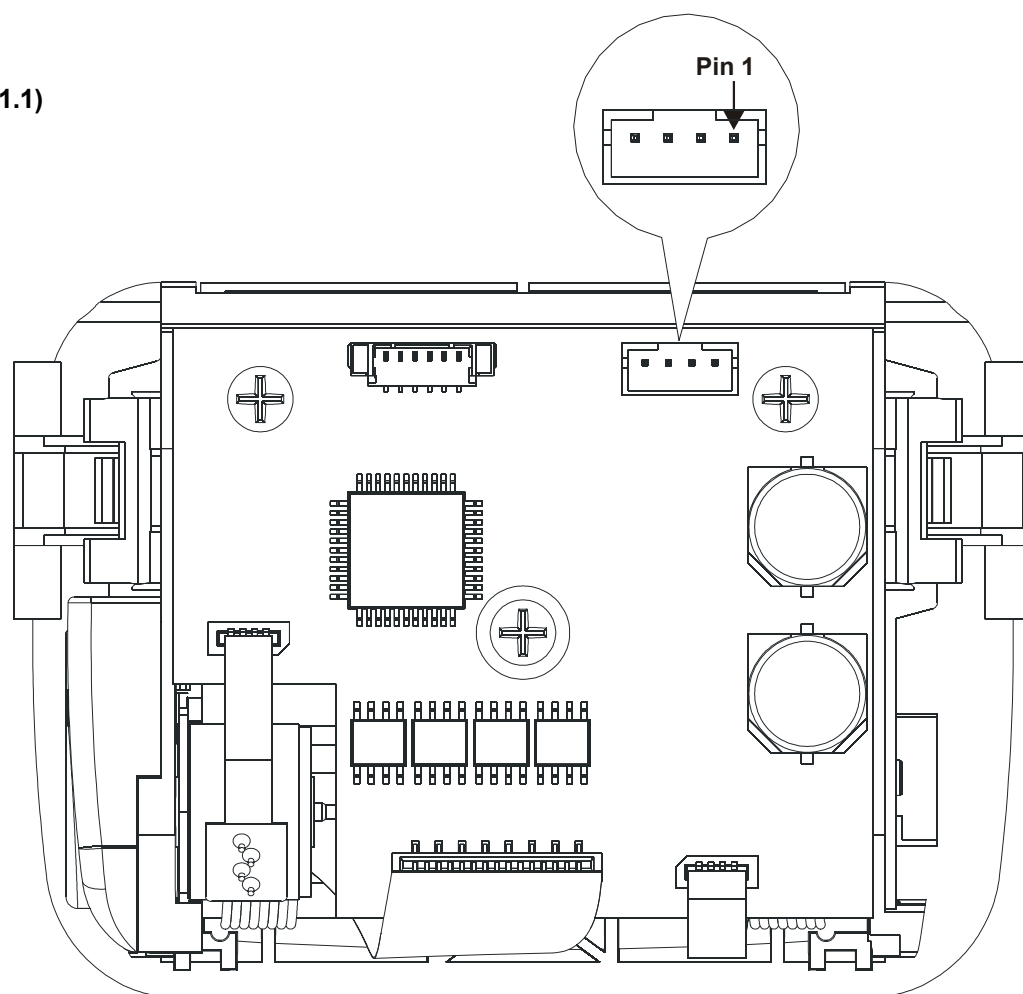
LED status	Description
Always off	Printer off
Always on	Printer on - no fault
Slow blinking	Paper Out message
Fast blinking	Recoverable error (head overtemperature, supply voltage error)

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1. INSTALLATION AND USE

1.1 CONNECTIONS

(Fig.1.1)



1.1.1 Power Supply

The printer is equipped with a 4 pin JST male connector (SMT) for the power supply. The signals on the connector pins are as follows::

Model no. type:

Header : B4B-PH-SM3-TB (JST)

Housing : PHR-4 (JST) or equivalent

(Tab.1.1)

Pin no.	Signal	Notes
1	GND	
2	GND	
3	+VP: 5 Vdc $\pm$ 10%	(head voltage)
4	+VC: 5 Vdc $\pm$ 5%	(logic supply voltage)



WARNING

Respect the polarity of the power supply.

1.2 SELF-TEST

Printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed (see figure 1.2), the following information is given:

- under *HEAD TEMPERATURE* is given the temperature of the head.
- under *HEAD VOLTAGE* is given the voltage of the head.

(Fig.1.2)

```
* PRINTER SETUP *

HEAD TEMPERATURE [°C]= 32.5
HEAD VOLTAGE [V]      = 5,0

Baud Rate           : 38400 bps
Data length         : 8 bits/chr
Parity               : None
Handshaking         : Xon/Xoff
Autofeed            : CR disabled
Columns             : 24 col.
Print Mode           : Normal
Chars Mode           : Normal
Print Density        : 0

[PUSH]      ENTER SET-UP
[FAST PUSH] EXIT
```

1.3 CONFIGURATION

This printer permits the configuration of default parameters. The printer's configurable parameters are:

- **Baud Rate:** 38400, 19200^D, 9600, 4800, 2400, 1200, 600.
- **Data length:** 7, 8^D bits/car.
- **Parity:** None^D, Even or Odd.
- **Handshaking:** XON/XOFF^D or Hardware.
- **Autofeed:** CR disabled^D or CR enabled.
- **Columns:** 24 col.^D, 40 col.
- **Print Mode:** Normal^D or Reverse.
- **Char Mode:** Normal^D, Double width (2 x Width), Double height (2 x Height), Expanded.
- **Print density:** -2, -1, 0^D, +1, +2.

Please note: the parameters marked with the symbol ^D represent the default values.

The settings made are stored in nonvolatile memory and are loaded automatically.

During power-up, if the FEED key ⁽¹⁾ is held down, the printer enters the autotest routine and prints out the setup report. The printer will remain in Hexadecimal dump mode (see section 1.4) until another key is pressed or characters are received through the printer communication port.

When the FEED key ⁽¹⁾ is pressed, the printer enters parameter configuration. Each time the FEED key ⁽¹⁾ is pressed, the parameter will change and the current value will be printed out. Once the desired value has been attained, hold the FEED key ⁽¹⁾ down for at least a second to pass to the next parameter, and so on. Printing out of a new printer set up report indicates that set up is complete.



NOTE⁽¹⁾: The FEED key is external and must be connected to serial connector as indicated in paragraph 2.1.

1. INSTALLATION AND USE

1.4 HEXADECIMAL DUMP

This function is used to display the characters received from the communications port; after the reception of each 8 characters from the communications port, the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.

Shown below is an example of a Hexadecimal Dump:

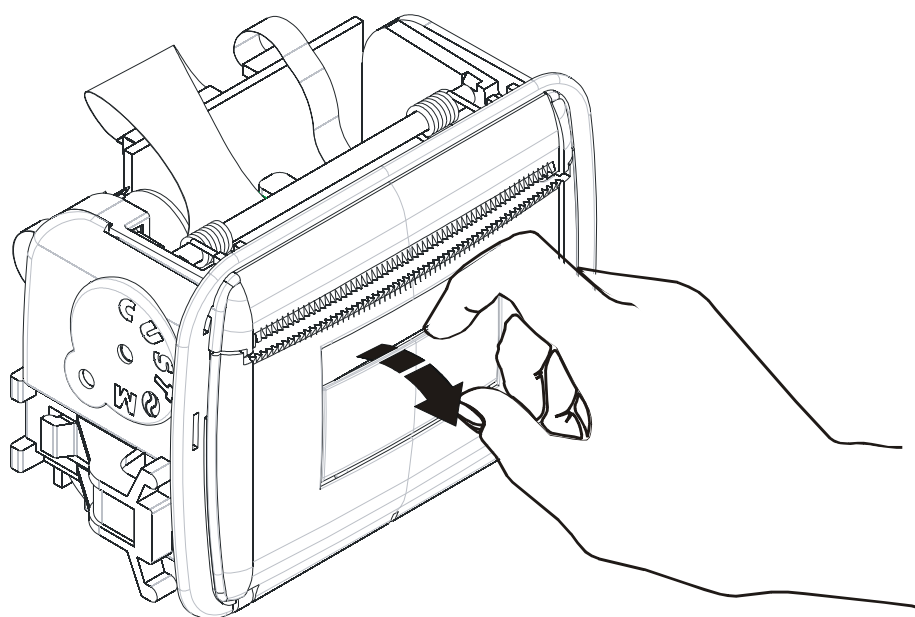
48	65	78	61	64	65	63	69	Hexadeci
6D	61	6C	20	64	75	6D	70	mal dump
20	66	75	6E	63	74	69	6F	functio
6E	20	30	31	32	33	34	35	n 012345
36	37	38	39	61	62	63	64	6789abcd
65	66	67	68	69	6A	6B	6C	efghijkl
6D	6E	6F	70	71	72	73	74	mnopqrst
75	76	77	78	79	7A			uvwxyz

1.5 MAINTENANCE

1.5.1 Changing the paper roll

To change the roll of paper, proceed as follows:

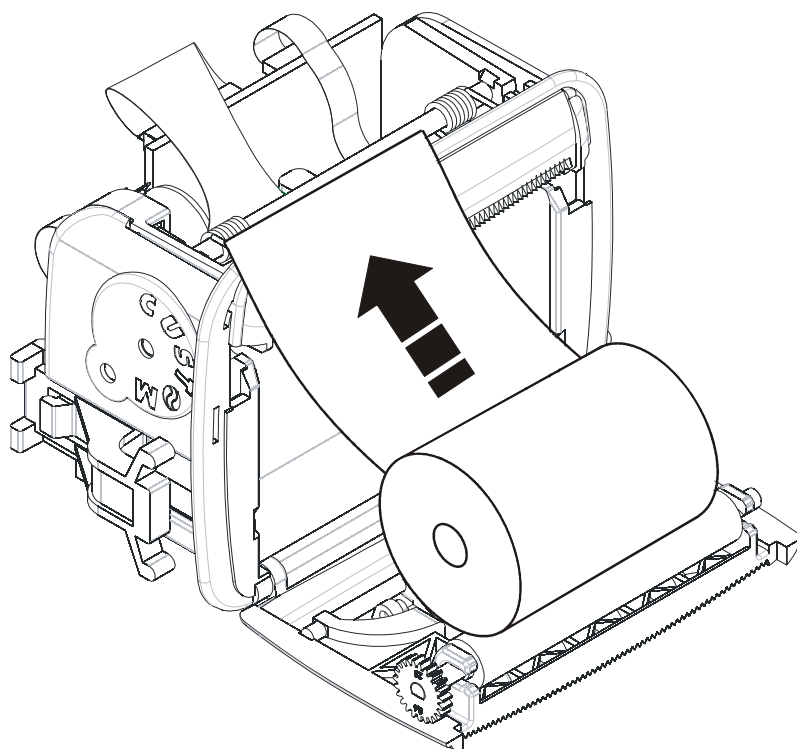
- 1) Open the printer cover as shown in fig. 1.3;



(Fig.1.3)

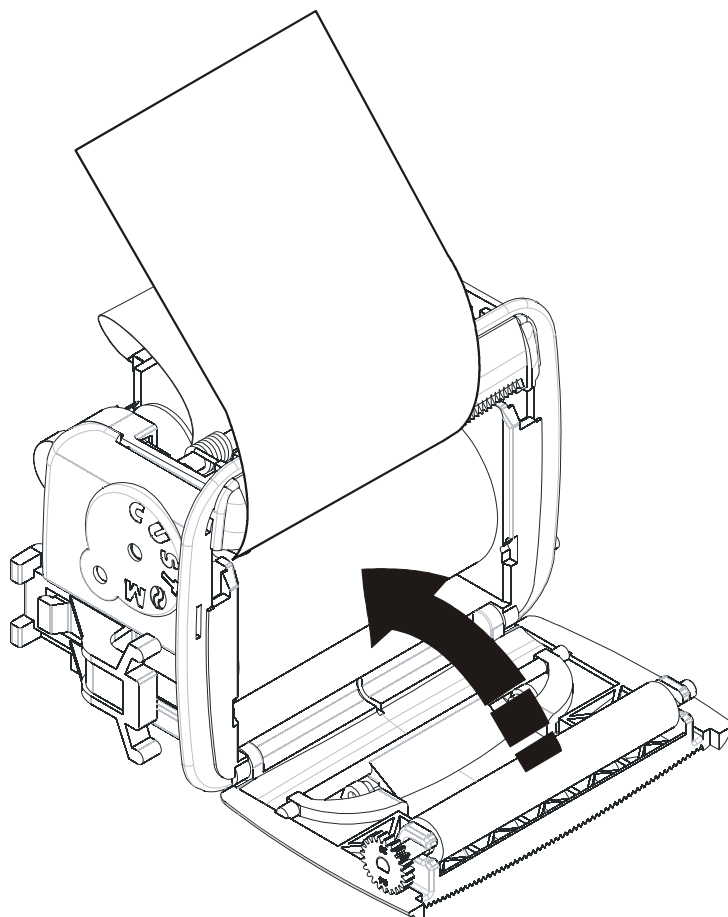
1. INSTALLATION AND USE

- 2) Position the paper roll making sure it unrolls in the proper direction as shown in the figure 1.4;



(Fig.1.4)

- 3) Tear off the paper as shown in fig. 1.5 and re-close the cover;

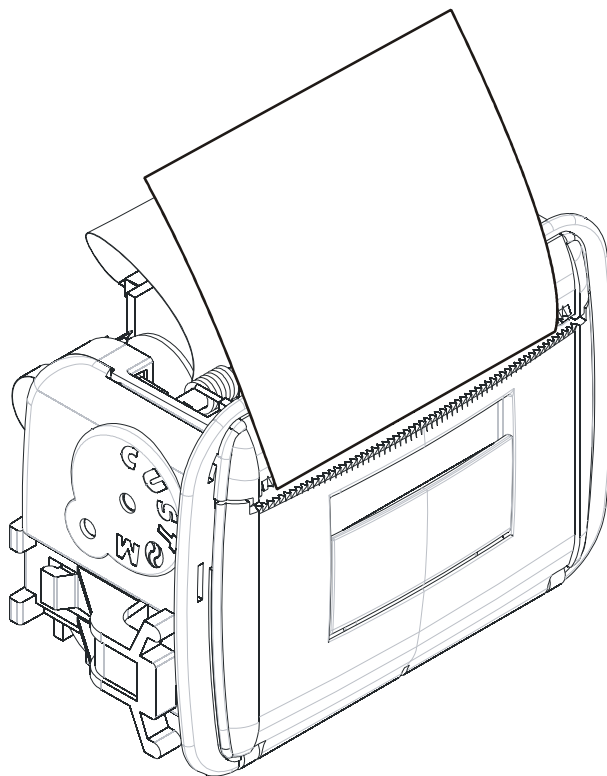


(Fig.1.5)

1. INSTALLATION AND USE

- 4) The printer is ready.

(Fig.1.6)



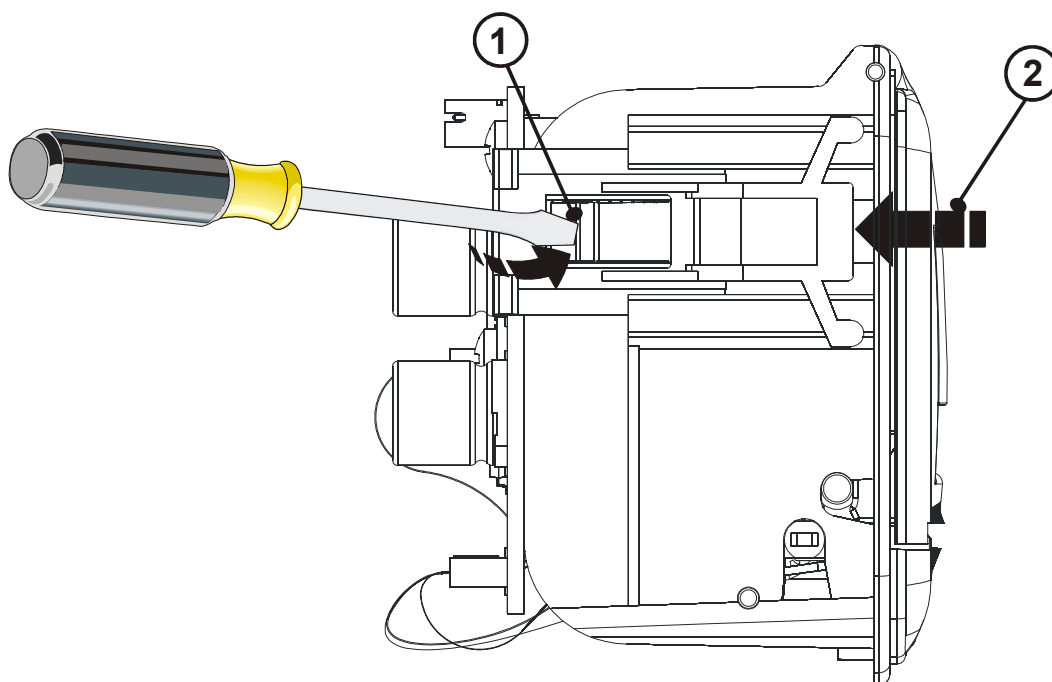
1.5.2 "EASYLOCK" fixing system

This system allows to adapt the printer to every panel thickness and it is not necessary to use other fixing tools. To fix the printer you can use only the 2 hooks, already mounted on the printer, stopping the printer in the more convenient position.

To remove the fixing hook, referring picture 1.7:

-using a flat screwdriver lift the flap (1) and at the same time take away (2) the hook.

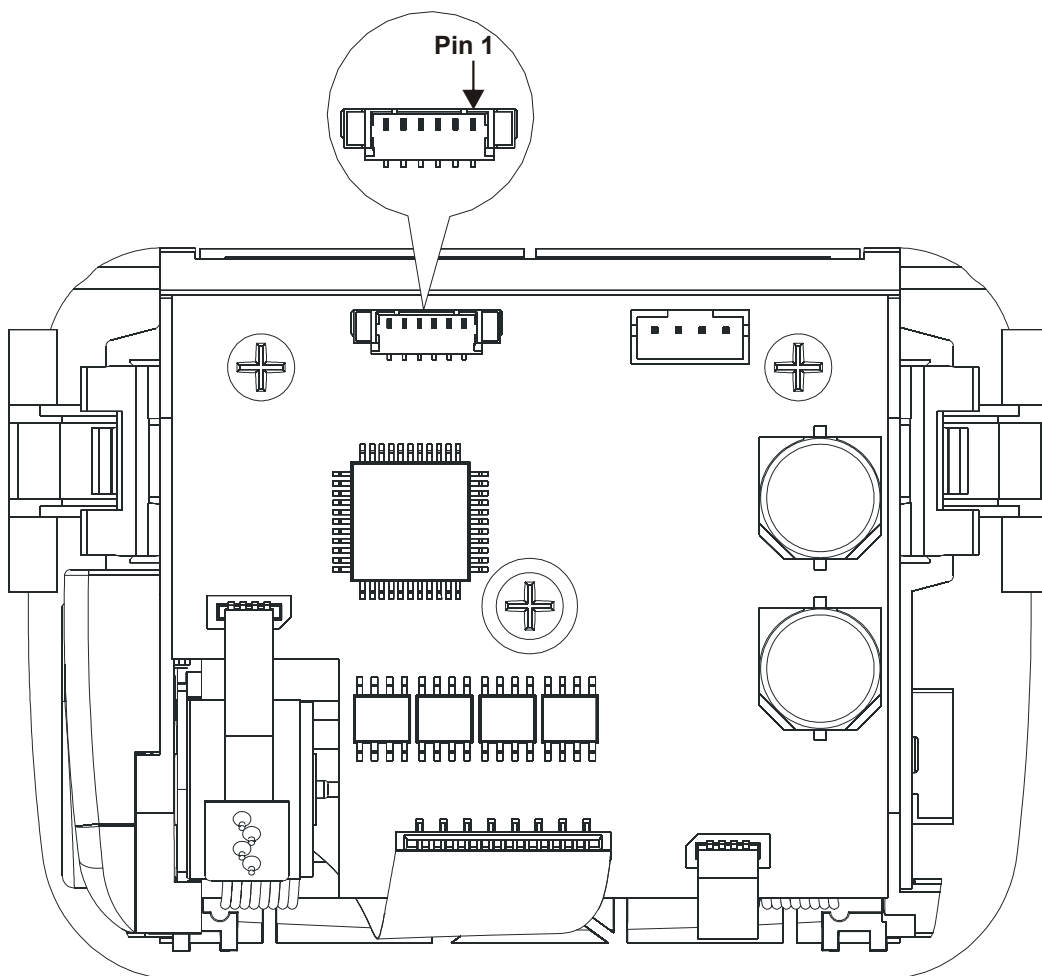
(Fig.1.7)



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2. INTERFACES

2.1 RS232 SERIAL



(Fig.2.1)

The printer with a serial RS232 has a molex 6-pin male connector 53398 series (Vertical SMT). Refer to the table below for the connector pin signals:

Model no. type : Header : Molex 53398 series 6-pin (no. 53398-0690)
Housing : Molex 51021 series 6-pin (no. 51021-0600)

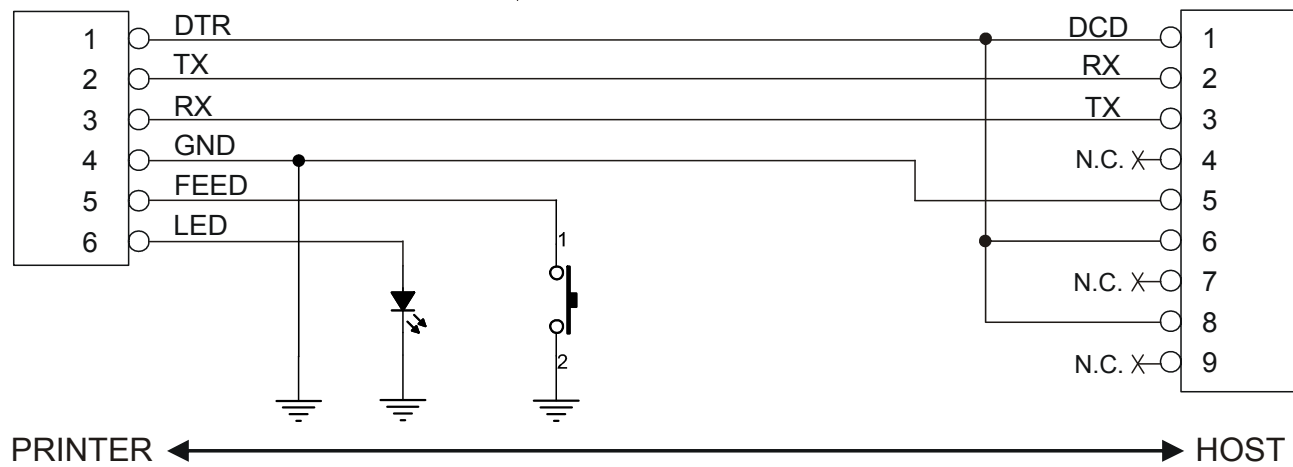
(Tab.1.1)

Pin no.	Signal	IN/OUT	Description
1	DTR	OUT	Data Terminal Ready
2	TX	OUT	Data transmission
3	RX	IN	Data reception
4	GND	-	Signal ground
5	FEED	IN	FEED signal (active at low level)
6	LED	OUT	LED signal (active at high level)

2. INTERFACES

The following scheme, shown in figure 2.2, represent the connection cable configuration between Molex connector 51021 series 6-pin (female) and a 9-pin connector (female). This cable can be use as wiring between the printer board and a 9-pin connector (male) of a generic host.

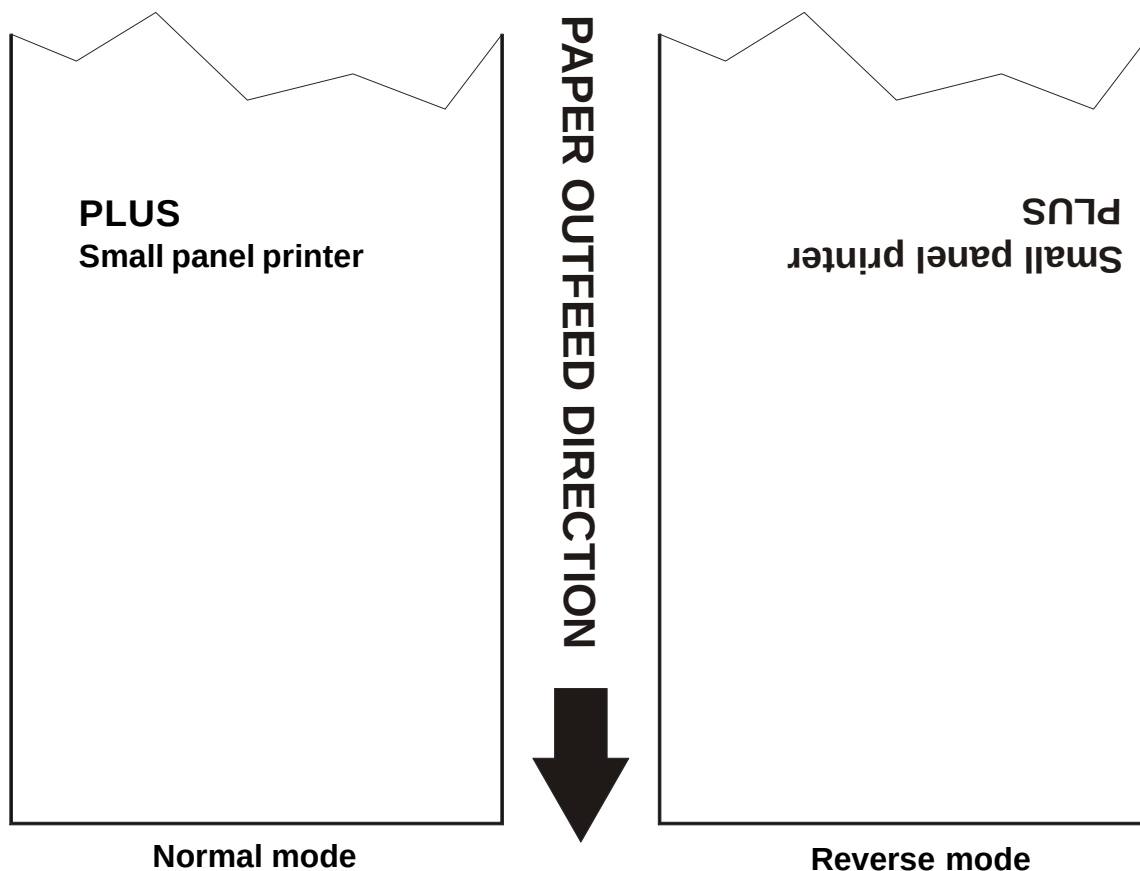
(Fig.2.2)



3. PRINTER FUNCTIONS

3.1 PRINT DIRECTION

The printer has two printing directions which can be selected by means of the control characters: normal and reverse.



(Fig.3.1)

3.2 CONTROL CHARACTERS

LEGEND :

Symbol	Function
\$	indicates the representation of the command hexadecimal value (for example \$40 means HEX 40).
{ }	indicates an ASCII character not performable.
n, m, t, x, y	are additional/optional parameters that can have different values.

The command table lists all the commands for the management of the printer functions. The commands can be transmitted to the printer at any moment, but they will only be carried out when the characters previously transmitted have been printed or the commands previously transmitted have been carried out. There are no commands with priority status; all the commands are carried out when the circular buffer is free to do so.

COMMAND TABLE

(Table 3.1)

HEX	ASCII	Description	Note
\$00		Prints in small characters	
\$01		Prints in double width	
\$02		Prints in double height	
\$03		Expanded printing	
\$04		Restores small character printing	
\$0A		Forward feeds one line	
(n) \$0B		Forward feeds (n) line	

3. PRINTER FUNCTIONS

HEX	ASCII	Description	Note
\$0D		Prints line buffer	
\$0F		Sets CRLF mode	
\$11		Graphic mode	
\$1B \$23 n	ESC # n	Transmit printer ID	
\$1B \$40	ESC @	Resets the printer	
\$1B \$41	ESC A	Executes [n] dots line feed	
\$1B \$49	ESC I	Selects 24 columns	
(dd) \$1B \$4D	(dd) ESC M	Writes value (dd) in print mode	
\$1B \$4E	ESC N	Sets normal mode printing	
\$1B \$51	ESC Q	Enables underlining	
\$1B \$52	ESC R	Sets reverse mode printing	
\$1B \$57	ESC W	Prints graphic line of 200 dpi	
\$1B \$61	(dd) ESC a	Selects number of dot spaces	
\$1B \$63	ESC c	Management of bar code printing	
\$1B \$68	ESC h	Selects 42 columns	
\$1B \$69	ESC i	Selects 40 columns	
\$1B \$6D	ESC m	Transmits print mode in serial	
\$1B \$71	ESC q	Disables underlining	
\$1B \$73	ESC s	Transmits next character in serial	
\$1B \$76	ESC v	Transmits printer ID	
\$1B \$FA n1 n2	ESC { } n1 n2	Prints graphic	
\$1D \$24 n	GS \$ n	Set absolute shift into a graphic line	
\$1D \$49 n	GS I n	Transmits the printer ID	
\$1D \$55	GS U	Resets printer parameters to default value	
\$1D \$57 n	GS W n	Prints n byte of a 200 dpi graphic line	

The following pages provide a more detailed description of each command.

\$00

[Name]	Small character printing
[Format]	ASCII {} Hex 00 Decimal 0
[Description]	The printer prints in small characters (normal)
[Notes]	• The commands \$00 - \$09 do not cancel the print buffer • The commands which modify the direction of the characters are only active at the beginning of the line
[Default]	Setting in option register by means of front keys
[Reference]	\$01, \$02, \$03, \$04
[Example]	

\$01

[Name]	Double width printing
[Format]	ASCII {} Hex 01 Decimal 1
[Description]	The printer prints in double width format

3. PRINTER FUNCTIONS

[Notes]	• The commands \$00 - \$09 do not cancel the print buffer • The commands which modify the direction of the characters are only active at the beginning of the line
[Default]	Setting in option register by means of front keys
[Reference]	\$00, \$02, \$03, \$04
[Example]	

\$02

[Name]	Double height printing
[Format]	ASCII {} Hex 02 Decimal 2
[Description]	The printer prints in double height format
[Notes]	• The commands \$00 - \$09 do not cancel the print buffer • The commands which modify the direction of the characters are only active at the beginning of the line
[Default]	Setting in option register by means of front keys
[Reference]	\$00, \$01, \$03, \$04
[Example]	

\$03

[Name]	Expanded printing
[Format]	ASCII {} Hex 03 Decimal 3
[Description]	The printer prints in expanded character mode
[Notes]	• commands \$00-\$09 do not cancel the print buffer • the commands which modify the dimensions of the characters are only active at the beginning of the line
[Default]	Setting in the option register by means of the front keys
[Reference]	\$00, \$01, \$02, \$04
[Example]	

\$04

[Name]	Restore small character printing
[Format]	ASCII {} Hex 04 Decimal 4
[Description]	The printer resumes printing with small characters
[Notes]	• The commands \$00-\$09 do not cancel the print buffer • the commands which modify the dimensions of the characters are only active at the beginning of the line
[Default]	Setting in the option register by means of the front keys
[Reference]	\$00, \$01, \$02, \$03
[Example]	

3. PRINTER FUNCTIONS

\$0A

[Name] **Forward feeds one line**

[Format] ASCII { }
Hex 0A
Decimal 10

[Description] Forward feeds one line equivalent to a line of print

[Notes]

- This command brings about the printing of the contents of the line buffer
- If the line buffer is empty this command executes a line feed of 24 dots (= 3 mm). If the line buffer contains text the line feed is = (character height + spacing) dots (default = 4 mm).

[Default]

[Reference] **\$0B**

[Example]

(n) \$0B

[Name] **Forward feeds (n) lines**

[Format] ASCII { }
Hex 0B
Decimal 11

[Description] Carries out the number of line feeds specified in (n)

[Notes]

- The number must be ASCII and between 0 and 9 (when n=0 the command is ignored)
- This command clears the line buffer

[Default]

[Reference] **\$0A**

[Example] To forward feed fast, 5 lines at a time:
\$35 \$0B (or 5 and the command \$0B)

\$0D

[Name] **Print the line buffer**

[Format] ASCII { }
Hex 0D
Decimal 13

[Description] This command prints the line buffer

[Notes]

- If the line buffer is empty, the command is ignored
- If the CRLF option is set, this command is ignored and printing can only be ordered through the command \$0A

[Default]

[Reference] **\$0F**

[Example]

\$0F

[Name] **Set CRLF mode**

[Format] ASCII { }
Hex 0F
Decimal 15

[Description] Inhibits the command \$0D maintaining enabled only the command \$0A for printing

3. PRINTER FUNCTIONS

[Notes]	• To disable this option, reset the printer • This command clears the line buffer • On switching on the default value is in the Option Register
[Default]	Setting in the option register by means of the front keys
[Reference]	\$0D
[Example]	

\$11

[Name]	Graphic mode
[Format]	ASCII {} Hex 11 Decimal 17
[Description]	Enables graphic mode: a line in 24 column mode corresponds to 144 horizontal dots divided into 24 blocks of 6 dots each; a line in 40 column mode corresponds to 240 horizontal dots divided into 40 blocks of 6 dots each.
[Notes]	To obtain graphic printing, enter the command \$11 at the beginning of each line. The format of the byte in graphic configuration is: X R P6 P5 P4 P3 P2 P1 D7 D6 D5 D4 D3 D2 D1 D0 where: X is not used (0 is recommended); R must be fixed at level 1; P1, P6 are the graphic dot data (1 prints, 0 does not print). The P6 bit of the string of dots transmitted is printed on the left and the others follow from left to right (P5, P4, P3, P2, P1) as shown: 1st byte → 2nd byte → 3rd byte → P6 P5 P4 P3 P2 P1 P6 P5 P4 P3 P2 P1 P6 P5 P4 P3 P2 P1
[Default]	
[Reference]	
[Example]	To print a line of dots, transmit: \$11, n x \$7F (where n is the number of characters per line), \$0D. To print an empty line, transmit: \$11, \$40, \$0D.

\$1B \$23 n

[Name]	Transmit printer ID
[Format]	ASCII ESC # n Hex 1B 23 n Decimal 27 73 n
[Range]	1 ≤ n ≤ 3, 49 ≤ n ≤ 51
[Description]	Transmits the printer ID specified by n follows:

n	Printer ID	Specification
1, 49	Printer model ID	\$1B
2, 50	Not used	Fixed on \$00
3, 51	ROM version ID	Depends on version ROM (4 char)

3. PRINTER FUNCTIONS

[Notes] • This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

[Default]

[Reference]

[Example]

\$1B \$40

[Name] **Resets the printer**

[Format]	ASCII	ESC	@
	Hex	1B	40
	Decimal	27	64

[Description] Cancels all the data in the print buffer and resets the printer mode, restoring the mode which was enabled at the moment of switching on

[Notes] • Same as hardware reset
• After the command has been transmitted, 1.5 seconds elapse before the printer is enabled

[Default]

[Reference]

[Example]

\$1B \$41 nH nL

[Name] **Executes [n] dots line feed**

[Format]	ASCII	ESC	A	nH	nL
	Hex	1B	41	nH	nL
	Decimal	27	65	nH	nL

[Description] Executes [n] dots line feed where $N = 256 \times nH + nL$.

[Notes] • 1 mm = 8 dot line.
• The maximum paper line feed value is about 1 m.

[Default]

[Reference]

[Example] To forward feed 40mm send this sequence :
\$1B \$41 \$01 \$40 (the ESC A command with 40mm x 8dot)

\$1B \$49

[Name] **Selects 24 columns**

[Format]	ASCII	ESC	I
	Hex	1B	49
	Decimal	27	73

[Description] On receiving this command, the printer enters 42-column per line printing mode.

[Notes]

[Default]

[Reference] **\$1B \$69, \$1B \$68**

[Example]

3. PRINTER FUNCTIONS

(dd) \$1B \$4D

[Name]	Writes the value (dd) in the print mode				
[Format]	ASCII	dH	dL	ESC	M
	Hex	dH	dL	1B	4D
	Decimal	dH	dL	27	77
[Range]	dH = 48 $48 \leq dL \leq 51$				
[Description]	Sets the print mode default parameters: \$00 small character printing \$01 double width printing \$02 double height printing \$03 expanded printing				
[Notes]	• The setting is stored in the EEPROM				
[Default]	Setting by means of the front keys				
[Reference]	\$1B \$6D				
[Example]	For double height printing, transmit: \$30 \$32 \$1B \$4D				

\$1B \$4E

[Name]	Set normal mode printing		
[Format]	ASCII	ESC	N
	Hex	1B	4E
	Decimal	27	78
[Description]	Select normal mode printing: the receipt feeds out of the printer with the printing upside down running from right to left		
[Notes]			
[Default]	Setting in option register by means of front keys		
[Reference]	\$1B \$52		
[Example]			

\$1B \$51

[Name]	Enable underlined printing		
[Format]	ASCII	ESC	Q
	Hex	1B	51
	Decimal	27	81
[Description]	After this command has been received, the characters are printed underlined.		
[Note]			
[Default]			
[Reference]	\$1B \$71		
[Example]			

\$1B \$52

[Name]	Set reverse mode printing		
[Format]	ASCII	ESC	R
	Hex	1B	52
	Decimal	27	82

3. PRINTER FUNCTIONS

[Description] Selects printing in reverse mode: the receipt feeds out of the printer with the printing in normal mode running from left to right.

[Notes]

[Default] Setting in option register by means of front keys

[Reference] **\$1B \$4E**

[Example]

\$1B \$57

[Name] **Prints a graphic line at 203 dpi**

[Format]	ASCII	ESC	W
	Hex	1B	57
	Decimal	27	87

[Description] After receiving this command, the printer waits for 48 bytes which correspond to an entire graphic line. In fact, 48 bytes of 8 bits each correspond to 384 dots per line.

[Notes]

[Default]

[Reference]

[Example]

(dd) \$1B \$61

[Name] **Selects the number of dot spaces**

[Format]	ASCII	(dd)	ESC	a
	Hex	(dd)	1B	61
	Decimal	(dd)	27	97

[Description] By using (dd) parameters it's possible to select the dot line number between one print line and another.

[Notes] • (dd) are two ASCII characters (selected between '0', '1', ..., '9', 'A', 'B', ..., 'F') which identifies number from 0 to 127 in hexadecimal form and corresponds to the number of dot lines between one print line and another. The acceptable range is from 00H to 7FH.

[Default] 0

[Reference]

[Example]

\$1B \$63

[Name] **Management of bar code printing**

[Format]	ASCII	ESC	c	[code] [height] [position] [options] [length] [data]
	Hex	1B	63	
	Decimal	27	99	

[Description] **[ASCII code]** Type of bar code

I	Interleaved 2/5
C	Code 39
B	CodaBar
e	EAN8
E	EAN13

[height] Number of dot lines in 1/8 mm. units.

3. PRINTER FUNCTIONS

[position] Left hand margin, expressed in 1/8 mm. units

[options] Specify the bar code options through a byte. In the following tables are listed all the possible values of single bit inside of byte :

Bit 0	Function	Description
0	Check digit is not printed	Check digit
1	Check digit is printed	

Bit 1	Function	Description
-	Not used	-

Bit 3	Bit 2	Function	Description
0	0	No	HRI position
0	1	Above	
1	0	Below	
1	1	Above & below	

Bit 5	Bit 4	Function	Description
0	0	Normal	Barcode width
0	1	Double	
1	0	Triple	
1	1	Not used	

Bit	Function	Description
6	Not used	-
7	Not used	-

[length] Specify the characters number to print through a byte; in following are listed the maximum lengths allowed :

Interleaved 2/5 = 12 characters
 Code 39 = 10 characters
 CodaBar = 10 characters
 EAN8 = 7 characters
 EAN13 = 12 characters

[data] Specify the characters to print expressed in ASCII

[Notes]

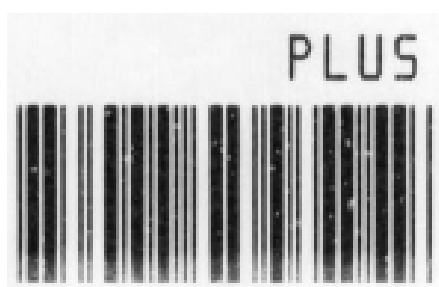
- For EAN8 and EAN13 barcodes the check digit is automatic.
- When CODE 39 barcode is used with triple width function, if 6 characters + check digit are sent the print limits are exceeded, so the barcode can't be printed.

[Default]

[Reference]

[Example]

In the following example is indicated the command sequence to print a barcode :
 \$1B, 'N', \$1B, 'c', 'C', \$50, \$3C, \$14, \$04, 'PLUS'



3. PRINTER FUNCTIONS

where :

\$1B, 'N'	(sets the printing in normal mode)
\$1B, 'c',	(bar code printing command)
'C',	(barcode type = Code 39)
\$50,	(barcode heigth = 10 mm)
\$3C,	(starting position = 7,5 mm)
\$14,	(HRI printing below, barcode width double)
\$04,	(characters number to print)
'PLUS'	(characters to print)

[Notes]

[Default]

[Reference]

[Example]

\$1B \$68

[Name]

Selects 42 columns

[Format]

ASCII	ESC	h
Hex	1B	68
Decimal	27	104

[Description]

On receiving this command, the printer enters 42-column per line printing mode.

[Notes]

[Default]

[Reference]

\$1B \$49, \$1B \$69

[Example]

\$1B \$69

[Name]

Selects 40 columns

[Format]

ASCII	ESC	i
Hex	1B	69
Decimal	27	105

[Description]

On receiving this command, the printer enters 40-column per line printing mode.

[Notes]

[Default]

[Reference]

\$1B \$49, \$1B \$68

[Example]

\$1B \$6D

[Name]

Transmits the print mode in serial

[Format]

ASCII	ESC	m
Hex	1B	6D
Decimal	27	109

[Description]

Transmits the print mode configuration on the serial port

[Notes]

• If the printer is using the parallel protocol, nothing will be transmitted

[Default]

Setting in the option register by means of the front keys

[Reference]

[Example]

The response is on two bytes. E.g. if you receive:

3. PRINTER FUNCTIONS

\$30, \$32

it means that printing is in double height mode

\$1B \$71

[Name]	Disables underlined printing		
[Format]	ASCII	ESC	q
	Hex	1B	71
	Decimal	27	113
[Description]	Annuls underlined printing		
[Notes]			
[Default]			
[Reference]	\$1B \$51		
[Example]			

\$1B \$73

[Name]	Transmits the next character in serial		
[Format]	ASCII	ESC	s
	Hex	1B	73
	Decimal	27	115
[Description]	Transmits the next character it receives on the serial port		
[Notes]			
[Default]			
[Reference]			
[Example]	If you transmit: \$1B \$73 \$41 the last character, A, will not be printed but immediately transmitted on the serial line		

\$1B \$76

[Name]	Transmit paper sensor status		
[Format]	ASCII	ESC	v
	Hex	1B	76
	Decimal	27	118
[Description]	When this command is received, transmit the current status of the paper sensor.		
[Notes]	• This command is executed immediately, even when the data buffer is full (Busy). The status to be transmitted is shown in the table below:		

Bit	Off/On	Hex	Decimal	Function
0,1	Off	00	0	Paper present
	On	03	3	Paper sensor not working
2,3	Off	00	0	Paper-end sensor: Paper present
	On	0C	12	Paper-end sensor: Paper not present
4	Off	00	0	Not used. Fixed to Off.
5	Off	00	0	Head temperature correct
	On	20	32	Head temperature error
6	Off	00	0	Supply voltage correct
	On	40	64	Supply voltage error
7	Off	00	0	Not used. Fixed to Off.

3. PRINTER FUNCTIONS

[Default]

[Reference]

[Example]

\$1B \$FA n1 n2

[Name] **Print graphic bank (384 × 85 dots).**

[Format] ASCII ESC ⌋ n1 n2
Hex 1B FA n1 n2
Decimal 27 250 n1 n2

[Range] $0 \leq n1, n2 \leq 255$

[Description] Prints the graphics bank from flash.
n1 specifies the starting dot line ($1 \div 85$).
n2 specifies the number of lines to print.

[Notes] • If $n1 + n2 > 85$ the printer only prints $85 - n1 + 1$ dotlines.

[Default]

[Reference]

[Example] To print the graphic bank from dotline 10 to dotline 40, send:
\$1B \$FA \$0A \$1E

\$1D \$24 n

[Name] **Set absolute shift into a graphic line.**

[Format] ASCII GS \$ n
Hex 1D 24 n
Decimal 29 36 n

[Range] $0 \leq n \leq 47$

[Description] Set the print beginning position into a graphic line based on the current value of *n* that indicate the byte number of shift from left margin.

[Notes] • Settings outside the specified printable area are ignored.

[Default]

[Reference]

[Example]

\$1D \$49 n

[Name] **Transmit printer ID.**

[Format] ASCII GS I n
Hex 1D 49 n
Decimal 29 73 n

[Range] $1 \leq n \leq 3, 49 \leq n \leq 51$

[Description] Transmits the printer ID specified by *n* follows:

n	ID stampante	Specifica
1, 49	Identificazione mod. stampante	\$1B
2, 50	Non utilizzato	Fisso su \$00
3, 51	Identificazione versione ROM	Dipende dalla versione ROM (4 car)

[Notes] • This command is executed when the data is processed in the data buffer. Therefore, there could be a time lag between command reception and data transmission, depending on data buffer status.

3. PRINTER FUNCTIONS

[Default]

[Reference]

[Example]

\$1D \$55

[Name] **Resets the printer parameters to default.**

[Format]	ASCII	GS	U
	Hex	1D	55
	Decimal	29	85

[Description] Resets the printer parameters to the default configuration.

[Notes] • After executing this command the printer is initialized.

[Default]

[Reference]

[Example]

\$1D \$57 n d1 ...dn

[Name] **Prints n byte of a 200 dpi graphic line**

[Format]	ASCII	GS	W	n	d1...	dn
	Hex	1D	57	n	d1...	dn
	Decimal	29	87	n	d1...	dn

[Range] $1 \leq n \leq 48$

$0 \leq d1 \dots dn \leq 255$

[Description] Print n byte of a 200 dpi graphic line where :

- n specifies the number of byte to print;
- d1...dn specify the bytes to print.

[Notes] • If the bit image data input exceeds the number of dots to be printed on a line, the excess data are processed as printable characters.

• d indicates the bit image data. Set a corresponding bit to 1 to print a dot, or to 0 to not print the dot.

• This command is not affected by the emphasized, double-strike, underline (etc.) print modes and the upside-down mode.

[Default]

[Reference]

[Example] For printing 12 bytes the command sequence is :
\$1D \$57 \$0C \$FF \$00 \$FF \$00 \$FF \$00 \$FF \$00 \$FF \$00 \$FF \$00

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4. TECHNICAL SPECIFICATIONS

4.1 TECHNICAL SPECIFICATIONS

Table 4.1 gives the main technical specifications for the 204 dpi printer model.

(Tab.4.1)

Columns	24, 40
Print method	Thermal
Resolution	203 DPI (8 dot/mm)
Paper specifications	
Type of paper	Thermal rolls Heat-sensitive side on outside of roll
Recommended types of paper	from 55 g/m ² to 70 g/m ² (KANZAN)
Width	57,5 mm +/- 1mm
External roll diameter	max Ø30 mm
Internal roll core diameter	13 mm
Core type	Cardboard or plastic
Sensors	Head temperature, paper end
Printing mode	Straight, Reverse
Printing format	Height/Width from 1 to 2, bold, reverse, underlined
Character fonts	ASCII Standard, EPSON, International.
Available interfaces	Serial RS232 (TTL optional)
Baud rate	Da 600 a 38400 bps
Receive buffer	128 bytes
Flash memory	32 Kbytes
Graphics memory	1 logos of 384 x 85 dots
Printing Driver	Windows™ 95, 98, ME, NT4, 2K, XP CUPS Linux
Power Supply	5 Vdc +/- 5% (Vcc) 5 Vdc +/- 10%(+VP)
Absorptions	
Medium consumption	0,1 A (Vcc) 3,3 A (+VP)
Stand by consumption	0,2 A
Weight ⁽¹⁾	90 gr.
Environmental conditions	
Operating temperature	0°C - 50°C
Relative humidity	10% - 80 % w/o condensation
Storage temperature / Humidity	-20°C - +70°C / 10% - 90%
OPTIONS	Connections and power supply cables kit



Notes : ⁽¹⁾ Referred without paper roll.

4. TECHNICAL SPECIFICATIONS

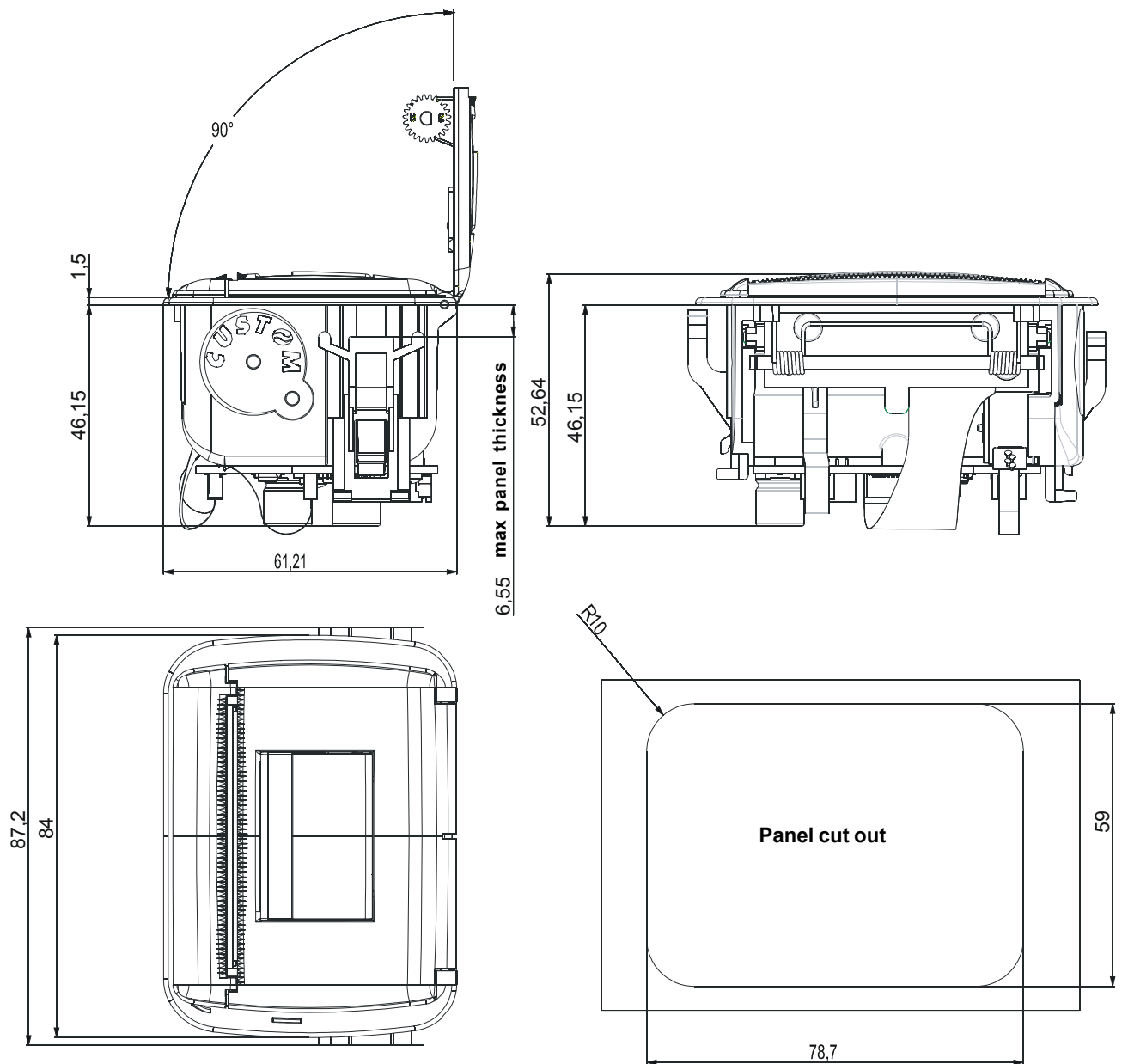
Emulation	CUSTOM	
Number of columns	24	40
Character matrix	16 x 24	8 x 24
Printing Speed		
Lines / sec	13	
Chars / sec	307	512
Characters		
Normal	2 x 3	1 x 3

4. TECHNICAL SPECIFICATIONS

4.2 DIMENSIONS

In the following figure shows the dimensions of the printer.

(Fig.4.1)



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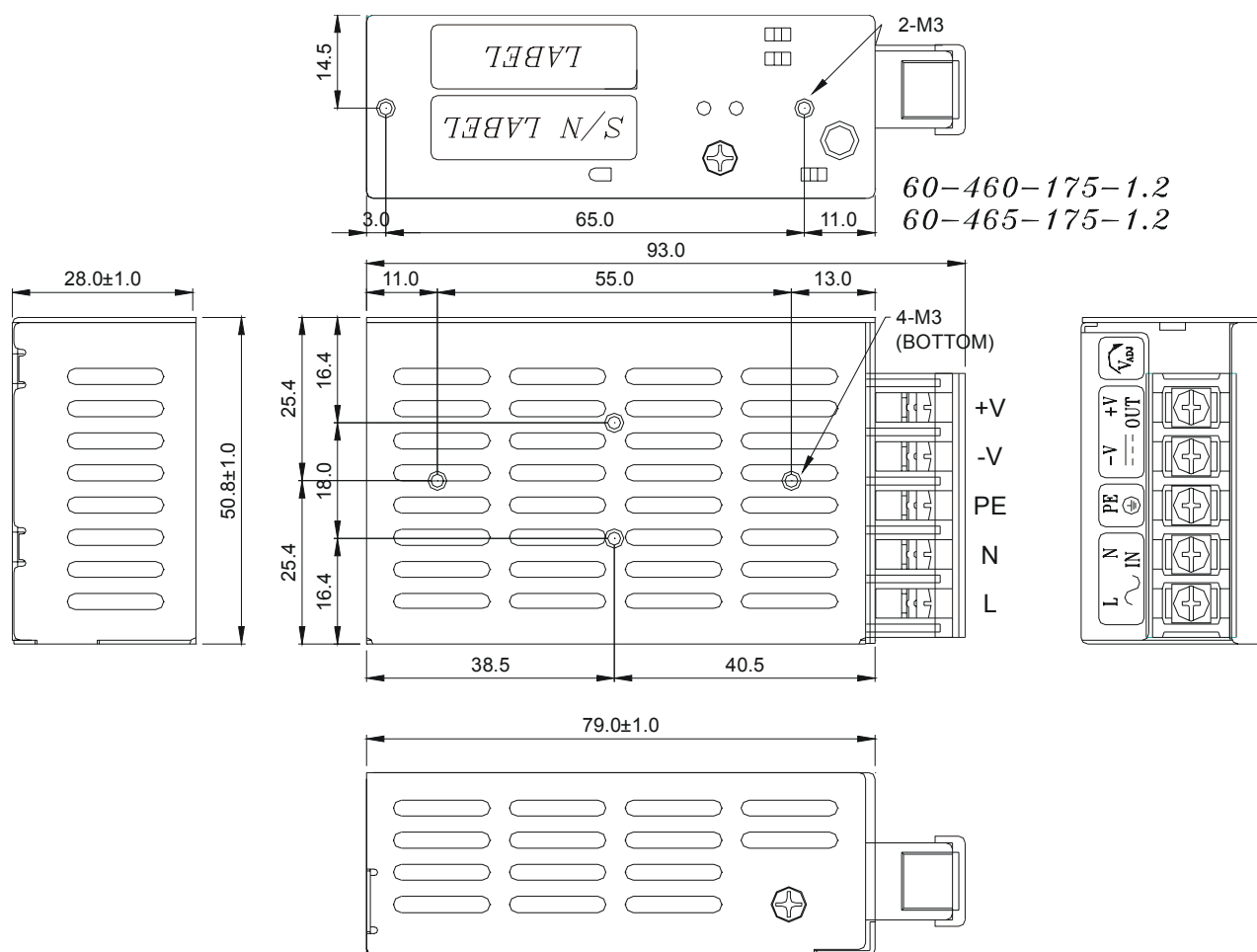
APPENDIX A - ACCESSORIES AND SPARE PARTS

A.1 ACCESSORIES

A.1.1 Power supply

The figure below illustrates the power supply provided by Custom to be used for printer operation.

(Fig.A.1)



1. TERMINAL BLOCK : 5P, PITCH 7.62 mm WITH PC COVER.
2. UNIT : mm.

(Tab.A.1)

PPSPS-025-05	Switching power supply 5V 25W
Input specifications	
Input voltage	AC: 85V ÷ 264V DC: 120V ÷ 375V
Current	0.8A max at 100V AC input
Input frequency	47 Hz ÷ 63 Hz
Output specifications	
Output voltage	5 V
Output current	5.0 A
Efficiency	72%
Environmental conditions	
Operating temperature	-25°C ÷ 70°C
Humidity	20% ÷ 85%
Storage temperature/ humidity	-25°C ÷ 75°C/ 10% ÷ 95% (w/o condensation)

Protection devices: Shortcircuit, overload and overvoltage.

APPENDIX A - ACCESSORIES AND SPARE PARTS

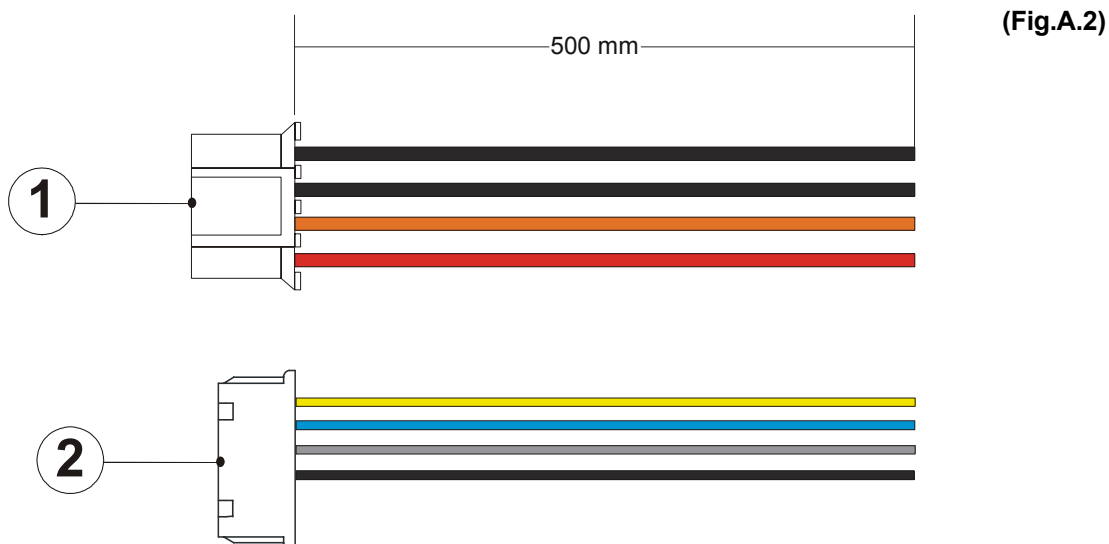
A.1.2 Data and power supply cables kit

The printer can be supplied with a data and power supply cable starter kit (see picture A.2)

PCSKPLUS	Starter Kit cables
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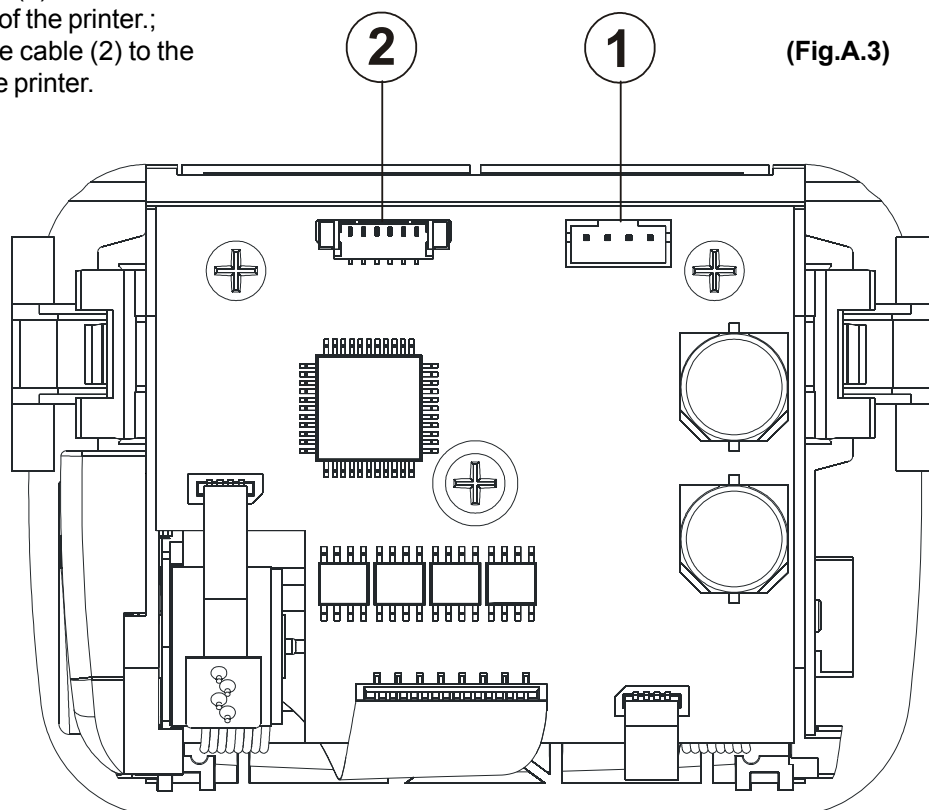
The kit includes (see picture A.2)

- power supply cable (1);
- data cable for serial interface (2).



To the cable connections see picture A.3;

- link the power supply cable (1) to the power supply (1) connector of the printer.;
- link the data serial interface cable (2) to the interface connector (2) of the printer.



APPENDIX A - ACCESSORIES AND SPARE PARTS

A.2 SPARE PARTS

(Tab.A.3)

RCT57X30	Thermal paper roll 57 mm diam. 30
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